Supplementary material
Appendix.1

Ecosystem-scale Effects of Megafauna in African Savannas

Gregory P. Asner¹, Nicholas Vaughn¹, Izak P. J. Smit²,³, Shaun Levick⁴

¹Department of Global Ecology, Carnegie Institution for Science, 260 Panama Street, Stanford CA 94305 USA

²Scientific Services, South African National Parks, Private Bag X402, Skukuza, 1350, South Africa

³Centre for African Ecology, School of Animal, Plant and Environmental Sciences, University of the Witwatersrand, Private Bag 3, Wits 2050, South Africa

⁴Department of Biogeochemical Processes, Max Planck Institute for Biogeochemistry, Hans-Knoll-Str. 10, Jena 07745, Germany

Figures A1-A10
Fig. A2. Maps of average fire return interval (FRI) and maximum FRI derived from fire mapping results of Smit et al. (2013).
Fig. A3. Maps of time since last fire (TSLF) and TSLF rarity (=exp(TSLF/FRI)) derived from fire mapping results of Smit et al. (2013).
Fig. A4. Maps of average elephant herd and bull density from 1985-2012 derived from aerial census data (Smit and Ferreira 2010).
Fig. A5. Maps of average elephant mixed herds and bull group density from 2008-2012 derived from aerial census data (Smit and Ferreira 2010).
Fig. A6. (a) Map of major soil classes provided by Venter (1986). (b) Map of mean annual precipitation (Schultze et al. 1997, Zambatis 2003).
Fig. A7. Maps of (a) elevation above sea level, (b) slope, (c) aspect and (d) relative elevation above nearest perennial stream derived from NASA Shuttle Radar Topography Mission (SRTM) data.
Fig. A8. Inter-relationships between potential explanatory factors used in the RandomForests modeling analysis. FRI = Fire Return Interval, TSLF = Time Since Last Fire, TSLF rarity=exp(-TSLF/FRI), and values for bull groups and mixed herds are average surveyed density over the given time period.
Fig. A9. Expansion of two panels from Fig. S8 showing the relationship between elevation (above sea level) and elephant herd observations from (a) 1985-2012 and (b) 2008-2012.
Fig. A10. Contribution of each potential explanatory factor in determining normalized treefall rate for (a,b) all canopies in all starting height classes on granitic and basaltic surfaces; (c,d) canopies with starting height classes <2 m on granitic and basaltic surfaces; and (e,f) canopies with starting height classes >2 m on granitic and basaltic surfaces. Uncertainty bars indicate standard errors (see Methods). FRI = Fire Return Interval, TSLF = Time Since Last Fire, TSLF rarity = \( \exp(-TSLF/FRI) \), and values for bull groups and mixed herds are average surveyed density over the given time period.
References


